

REMARKS

Claims 1-36 are currently pending in the application. Applicant has canceled claims 1-15, amended claims 16, 23, 24, 32, and added claims 37-48. Applicant requests reconsideration of the application in light of the following remarks.

Restriction Requirement

Applicant affirms the provisional election of Group II, claims 16-36, made during a telephone conversation with Examiner Hoffberg on March 16, 2006. The election is made with traverse. Applicant points out that claim 32 (now indicated as pertaining to group I) was originally included with the invention of group II. An accurate list of claims that belong to group II is claims 16-36 since claim 32 has been amended to depend from claim 31 to correct an error in dependency. No correction to the inventorship is required.

Objections to the Specification

The specification has been objected to for containing informalities. Applicant has amended the specification to address the Examiner's concerns by correcting the paragraphs that the Examiner indicated as having errors. (Note that instead of being at page 12, line 13, the blank for the serial number was on page 2, line 13.) Applicant respectfully requests that the Examiner withdraw the objection to the specification.

Rejections under 35 U.S.C. §102

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union*

Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 16-17 and 26-27 were rejected under 35 U.S.C. § 102(b) as being anticipated by Dinh (U.S. Patent No. 5,921,315, hereinafter "Dinh"). Applicants respectfully traverse this rejection and request reconsideration of the claims.

Dinh is directed to heat pipes that run through a series of fins for heat exchange. Dinh does not have a single longitudinal recess that runs through a solid mass of material such as a plate of the heat sink of the present invention. Thus, claim 16 has been amended to recite that the heat collector includes a plate with a longitudinal recess having a gas phase line therein so that the fins of Dinh having openings through which the heat pipes pass can no longer be properly applied to claim 16. Therefore, claim 16 is considered to be allowable over Dinh.

Claims 17, 26 and 27 are considered to be patentable as depending from allowable claim 16 and for further patentable features therein as may be appreciated by the Examiner.

Applicant respectfully requests that the anticipation rejections of claims 16-17 and 26-27 be withdrawn.

Rejections under 35 U.S.C. §103

To establish a *prima facie* case of obviousness under 35 U.S.C. §103, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the cited prior art reference must teach or suggest all of the claim limitations.

Furthermore, the suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based upon the Applicants' disclosure. A failure to meet any one of these criteria is a failure to establish a *prima facie* case of obviousness. MPEP §2143.

Claims 18-22

Claims 18-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dinh (U.S. Patent No. 5,921,315, hereinafter "Dinh"), as applied to the above claims in view of Nelson et al. (U.S. Patent No. 4,882,654, hereinafter "Nelson"). Applicants respectfully traverse this rejection and request reconsideration of the claims.

Regarding claim 18, The Examiner has stated that Nelson has a liquid phase line 34 inside a gas phase line 36. However, the disclosure of Nelson does not even indicate that the lines form a phase transition. Rather, Nelson discloses that both segments 34, 36 of the line may carry gas or both segments of the line may carry liquid. (See column 3, lines 15-20.) Therefore, none of claims 18-22 are met by the combination of Nelson with Dinh.

Further with regard to claims 18-22, the Examiner argues that it would be obvious to select a fluid that changes phases. However, the Examiner fails to indicate any teaching or suggestion for causing the phase change in a portion of the lines that will yield a liquid phase line inside the gas phase line. In fact, the only way the Examiner could reach such a conclusion appears to be by improper hindsight construction in light of the disclosure of the present invention.

Still further, the Examiner has failed to show a motivation for combining Nelson with Dinh. Dinh does not even have two lines that are adjacent to each other according to the structure of Nelson's lines in order to receive a "single interface attachment", as the Examiner asserts. Therefore, any interface attachment provided by Nelson and applied to Dinh would have to be

modified in a manner that is not taught or suggested anywhere, which manner is therefore not obvious.

Claims 18-22 should therefore be considered allowable over Dinh in view of Nelson.

Claims 23-24

Claims 23-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dinh (U.S. Patent No. 5,921,315, hereinafter "Dinh"), as applied to the above claims in view of Khrustalev et al. (U.S. Publication No. 2003/0010477, hereinafter "Khrustalev") and further in view of Nelson et al. (U.S. Patent No. 4,882,654, hereinafter "Nelson"). Applicant respectfully traverses this rejection and request reconsideration of the claims.

The Examiner argues that it would have been obvious to modify Dinh by replacing the heat collector fins of Dinh by the heat dissipater plate 36 of Khrustalev. Applicant respectfully disagrees. Firstly, the application of fins for heat collection in Dinh is ideal for an environment having convective heat transfer as opposed to an in-cabinet environment as taught by Khrustalev. Thus, there is no motivation for replacing the fins of Dinh with the plate of Khrustalev since doing so would provide less heat transfer in a convective environment. Secondly, the Examiner argues that the difference between a heat dissipater and a heat collector is insignificant with regard to the combination even though the heat collector specifics of the phase changes within the heat collector plate of the present invention are not disclosed in any of the references to Dinh, Nelson, and Khrustalev.

In particular, it is not clear where the heat collector plate of Nelson is so that an opening for both inlet and outlet can be identified. Khrustalev does not have an opening that accommodates both inlet and outlet so that in order to meet claim 23 a practitioner would have to modify Dinh with Khrustalev's plate 36, which is not obvious for reasons set forth above. Then the practitioner would have to further modify the modifier (Khrustalev) by providing a single opening having both

an inlet and an outlet in a heat exchanger plate even though such an analogous opening has not been identified in any of Nelson, Khrustalev, and Dinh. Therefore, claim 23 is considered to be allowable.

It should be noted that the recitation of "a longitudinal recess" has been moved into independent claim 16, which is now, therefore, considered to be patentable over the references relied upon.

Claim 24 requires a closed end of the recess within the plate. Similar to the fact that there is no plate identified in which there is an opening having both an inlet line and an outlet line, there is no plate identified in which there is a closed end of the recess. The Examiner's interpretation of a left side of the recess providing a second end is not in keeping with the customary definition of the term "end". This is especially so since, in the context of the claims, no first end has been identified that has an opening with both an inlet and an outlet. Therefore, claim 24 is considered to be allowable.

Claim 25

Claim 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dinh (U.S. Patent No. 5,921,315, hereinafter "Dinh"), as applied to the above claims in view of Khrustalev et al. (U.S. Publication No. 2003/0010477, hereinafter "Khrustalev") and further in view of Nelson et al. (U.S. Patent No. 4,882,654, hereinafter "Nelson") as applied to the above claims, and further in view of Harvey (U.S. Patent No. 3,283,811, hereinafter "Harvey"). Applicant respectfully traverses this rejection and request reconsideration of the claims.

With regard to the Examiner's four way combination of Dinh, Nelson, Khrustalev, and Harvey, Applicant takes exception. As set forth above, the combination of Khrustalev with Dinh to provide an longitudinal recess in a in a heat collector is improper and lacks motivation. Furthermore, (although the rejection of claim 25 is silent on the matter), it appears that the

Examiner continues to rely on Nelson to provide the opening in a heat exchanger that has both of an inlet and an outlet. As set forth above, there is no plate or heat exchanger identified with such an opening. Still further, the phase changing lines having a closed end as taught by Harvey do not remedy the lack of an opening having both inlet and outlet and the lack of a heat collector that has a longitudinal recess therein in the base reference to Dinh. The heat exchange to the lines of Harvey is principally convective and the application is very different from one in which any lines would be placed in a solid plate. Thus, it would be difficult to properly maintain that a combination of these four references would have been obvious. Even the statement of motivation for this combination utilizes a hindsight construction by declaring that the combination with Harvey would be "for the purpose of providing a single end for the fluid lines", which is not a motivation. Rather it is a feature of the present invention. Even from the rest of the statement of motivation it is not clear what would motivate one of ordinary skill in the art to make the combination proposed by the Examiner.

Therefore, claim 25 is considered to be allowable.

Claims 28-29

Claims 28-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dinh (U.S. Patent No. 5,921,315, hereinafter "Dinh"), in view of Nelson et al. (U.S. Patent No. 4,882,654, hereinafter "Nelson") as applied to the above claims, in further view of Anderson et al. (U.S. Patent No. 5,761,037, hereinafter "Anderson"). Applicant respectfully traverses this rejection and request reconsideration of the claims.

The Examiner admits that in combination Nelson and Dinh "fail to teach a manifold having a combined gas phase and liquid phase". This is in addition to the flaws pointed out above in which the combination of Nelson with Dinh is considered to be improper. For the rejection of claim 28,

it is significant that claim 26 recitation of a "composite line" was never met by Dinh. Rather, the single, non-composite line of Dinh carries both gas and liquid phase material in different portions thereof. Thus, there is no motivation or reason for including a manifold as taught by Nelson, Anderson or any other reference. Furthermore, it is not clear how the reference to Anderson could be combined with Dinh since the structures are so dissimilar that it is not possible to properly discern how the flow would be directed or what the combined structure might entail. If the structure were to be like the criss-cross flow element 102 of Anderson, it still appears that claim 28 would not be met. In particular, claim 28 recites "a manifold for uniting a separate gas phase line and a separate liquid phase line into the composite line". Yet in the structure and disclosure of Anderson there are no discrete gas and liquid lines forming a composite line. The only composite aspects do not entail gas and liquid lines.

Therefore, claim 28 cannot be met and is considered allowable.

Claim 29 is considered to be patentable as being dependent from allowable base claim 28 and for further patentable features therein as may be appreciated by the Examiner.

Claims 30-31 and 33-36

Claims 30-31 and 33-36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson et al. (U.S. Patent No. 4,882,654, hereinafter "Nelson"), in view of Anderson et al. (U.S. Patent No. 5,761,037, hereinafter "Nelson"). Applicant respectfully traverses this rejection and request reconsideration of the claims.

The Examiner has relied upon Nelson, which teaches that the lines may carry either liquid or gas as a coolant but does not teach any phase change that would enable interpretation of certain lines being gas and others being liquid, as required by claim 30-31. Furthermore, the combination with Anderson does not remedy the lackings of Nelson since there are no lines that can be

identified as gas or liquid phase lines in the criss-cross pattern on element 102 of Anderson. Thus, there can be no "internal gas phase line", as required by claim 30. Furthermore, there can be no "internal liquid phase line", as required by claim 31.

Therefore, claims 30 and 31 are considered to be allowable.

With regard to claim 33, once again, Nelson does not teach or suggest phase change so that the combination of liquid and gas in claim 33 is not met. Anderson fails to provide internal lines. Thus, a manifold having a liquid phase input connection fluidly connected to the external liquid phase line and a gas phase output connection fluidly connected to the external gas phase line is not met by Nelson, as required by a first part of claim 33; and Anderson does not remedy the lack of "a combined gas phase and liquid phase connection fluidly connected to the internal gas phase line and the internal liquid phase line", as required by the second part of claim 33.

With regard to claims 34-36, it appears that modifying the heat collector of Nelson with that of Anderson, as suggested by the Examiner, would remove the internal gas and liquid phase lines. Therefore, claim 34-36 are considered to be allowable.

Applicant respectfully requests that the obviousness rejections of claims 18-25, 28-31, and 33-36 be withdrawn.

New Claims

Applicant has added several new claims that correspond generally to details of the non-elected invention of claim 1-15 and that are generic to the elected invention of claims 16-36. Claim 48 is an independent claim that is similar in scope to claim 17. However, claim 48 incorporates slightly different terminology that highlights the solid aspect of the heat sink material that surrounds the internal liquid and gas phase lines.

Docket No.: FRON-10193
Application No.: 10/823,476
Amendment Date: September 11, 2006
Reply of Office Action of: April 10, 2006

Regarding Doctrine of Equivalents

Applicants hereby declare that any amendments herein that are not specifically made for the purpose of patentability are made for other purposes, such as clarification, and that no such changes shall be construed as limiting the scope of the claims or the application of the Doctrine of Equivalents.

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CONCLUSION

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

It is requested that a two-month extension of time be granted for the filing of this response, and the appropriate extension filing fee of \$225.00 be charged to Deposit Account No. 19-0513.

The amendments herein added one new independent claim and no net new dependent claims, for a total of three independent claims and a smaller net number of claims than previously paid for resulting in no additional fee due.

If any fees, including extension of time fees or additional claims fees, are due as a result of this response, please charge Deposit Account No. 19-0513. This authorization is intended to act as a constructive petition for an extension of time, should an extension of time be needed as a result of this response. The examiner is invited to telephone the undersigned if this would in any way advance the prosecution of this case.

Respectfully submitted,

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